PROPOSED

Covered Source Permit No. 0650-01-C
Renewal Application No. 0650-03
Significant Modification Application No. 0650-04

ORGANIZATION NAME:	Green Energy Team, L.L.C.
EQUIPMENT LOCATION:	Old Government Road, Koloa, Kauai
UTM Coordinates: (Zone 4)	452,443 m E; 2,429,060 m N (NAD-27) 452,731.5 m E; 2,428,854.3 m N (NAD-83)
RESPONSIBLE OFFICIAL:	Eric Knutzen Partner, Green Energy Team, L.L.C. P.O. Box 340 Anahola, HI 96703
SICC:	4911 Electric Services (electric power generation, transmission, or distribution)

PROPOSED PROJECT:
This review is for the renewal and significant modification for the Green Energy Team, LLC, and consists of two (2) permit applications: Application 0650-02 is for the renewal of Covered Source Permit (CSP) No. 0650-01-C. No changes were proposed to the existing permit in the renewal application.

Application 0650-03 is for a significant modification, and seeks to add two (2) new 455 kW diesel engine generators (DEG) to the list of permitted equipment. Each generator is powered by a 672 horsepower diesel engine. In addition to adding the two (2) DEG, a 450 kW generator determined to be an insignificant activity has been removed from the insignificant activity list.

The proposed DEG are tier 4 interim certified, and will be fueled with ultra-low sulfur diesel fuel (ULSD) with a sulfur content not to exceed 15 parts per million (0.0015% by weight). The applicant has proposed to limit the total fuel use of the two generators to 132,000 gallons per rolling twelve month (12-month) period. The gallon limit is comparable to operating both diesel engines for 2,000 hours at the maximum fuel rate. Fuel usage by each DEG will be monitored continuously using a non-resetting fuel meter.

At the same time the significant modification application was submitted, several items were requested and approved to be considered as insignificant activities. They are:

1. Evaporative Cooling Tower
2. 62 brake horsepower Tier 2-certified fire pump engine

Also a one-time only alternate operating scenario was used for the replacement of the electrostatic precipitator pursuant to Attachment II, Special Condition No. C.7.c.

The diesel engine generator specifications are:

Diesel Engine Generator Specifications		
Manufacturer		Caterpillar
Model		C15 ATAAC
Emissions Certification		Tier 4i
Generator Rating	kW	455
Engine Power	bhp	672
Fuel Consumption (HHV)	Btu/bhp-hr	6,705
Fuel Consumption	gal/hr	33.0
NO_x	g/hp-hr	2.49
CO	g/kW-hr	3.5
ROC (non-methane HC)	g/kW-hr	0.4
PM_{10}	g/kW-hr	0.1

EQUIPMENT TO BE ADDED:

1. 2- ea 672 hp diesel engine with 455 kW generator, Caterpillar Model No. C15 ATAAC, tier 4 interim certified, 33.0 gallons per hour, fired with ultra-low sulfur diesel

APPLICABLE REQUIREMENTS:

Hawaii Administrative Rules (HAR)

Chapter 11-59, Ambient Air Quality Standards
Chapter 11-60.1 Air Pollution Control
- Subchapter 1, General Requirements
- Subchapter 2, General Prohibitions
  - 11-60.1-31 Applicability
  - 11-60.1-32 Visible Emissions
  - 11-60.1-38 Sulfur Oxides from Fuel Combustion
  - 11-60.1-39 Storage of Volatile Organic Compounds
- Subchapter 5, Covered Sources
- Subchapter 6, Fees for Covered Sources, Noncovered Sources, and Agricultural Burning
  - 11-60.1-111 Definitions
  - 11-60.1-112 General Fee Provisions for Covered Sources
  - 11-60.1-113 Application Fees for Covered Sources
  - 11-60.1-114 Annual Fees for Covered Sources
- Subchapter 7, Prevention of Significant Deterioration Review
- Subchapter 8, Standards of Performance for Stationary Sources
  - 11-60.1-161 Standards of Performance for Stationary Sources
- Subchapter 9, Hazardous Air Pollutant Sources

40 CFR Part 63 Subpart ZZZZ—National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

The DEG's are stationary reciprocating internal combustion engines (RICE) located at an area source of hazardous air pollutants, and thus are subject to the standard. Pursuant to §63.6590(a)(2)(iii), the units are considered to be "new" sources since construction commenced after June 12, 2006.

For new sources, §63.6590(c)(1) states; "A new or reconstructed stationary RICE located at an area source meets the requirements of 40 CFR 63 Subpart ZZZZ by meeting the requirements

of 40 CFR Part 60 Subpart IIII. No further requirements apply for such diesel engines under this subpart.'

Therefore, the requirements of 40 CFR 63 Subpart ZZZZ are met by complying with 40 CFR Part 60 Subpart IIII.

40 CFR Part 60 Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

Pursuant to §60.4204(b), "Owners and operators of 2007 and later non-emergency stationary compression ignition (CI) internal combustion engine(s) (ICE) with a displacement of less than 30 liters per cylinder must comply with the emission standards for new CI engines in §60.4201 for their 2007 model year and later stationary CI ICE, as applicable.

§60.4201 states:

(a) Stationary CI internal combustion engine manufacturers must certify their 2007 model year and later non-emergency stationary CI ICE with a maximum engine power less than or equal to 2,237 kilowatt (KW) (3,000 horsepower (HP)) and a displacement of less than 10 liters per cylinder to the certification emission standards for new nonroad CI engines in 40 CFR 89.112, 40 CFR 89.113, 40 CFR 1039.101, 40 CFR 1039.102, 40 CFR 1039.104, 40 CFR 1039.105, 40 CFR 1039.107, and 40 CFR 1039.115, as applicable, for all pollutants, for the same model year and maximum engine power.

The emission standards listed in 40 CFR 89 are equivalent to tier 1-3 standards. 40 CFR 1039 covers tier 4 and tier 4i (interim) standards, which for a 455kW DEG are identical. The DEG's to be installed are certified to be tier 4i compliant, and thus meets the emission standards for new nonroad compression ignition engines.

§60.4027(b) states that beginning October 10, 2010, owners and operators of stationary CI ICE subject to 40 CFR 60 Subpart IIII with a displacement of less than 30 liters per cylinder that use diesel fuel must purchase diesel fuel that meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel.

§80.510(b) limits the sulfur content of the fuel to 15 parts per million (0.0015% by weight) with a minimum cetane index of 40, or a maximum aromatic content of 35 volume percent. The limits will be incorporated into the amended permit.

Pursuant to §60.4211, the applicable requirements for the subject DEG's are

(a) If you are an owner or operator and must comply with the emission standards specified in this subpart, you must do all of the following, except as permitted under paragraph (g) of this section:

    (1) Operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer's emission-related written instructions;
    (2) Change only those emission-related settings that are permitted by the manufacturer; and
    (3) Meet the requirements of 40 CFR parts 89, 94 and/or 1068, as they apply to you.

(b) Not applicable (not pre-2007 model year)

(c)\ If you are an owner or operator of a 2007 model year and later stationary CI internal combustion engine and must comply with the emission standards specified in §60.4204(b) or § 60.4205(b), or if you are an owner or operator of a CI fire pump engine that is manufactured during or after the model year that applies to your fire pump engine power rating in table 3 to this subpart and must comply with the emission standards specified in § 60.4205(c), you must comply by purchasing an engine certified to the emission standards in § 60.4204(b), or § 60.4205(b) or (c), as applicable, for the same model year and maximum (or in the case of fire pumps, NFPA nameplate) engine power. The engine must be installed and configured according to the manufacturer's emission-related specifications, except as permitted in paragraph (g) of this section.

(d) Not applicable (not subject to §60.4024(c) or §60.4205(c))(e). Not applicable (not modified or reconstructed statonary CI internal combustion engine)(f). Not applicable (not an emergency stationary ICE)(g). If you do not install, configure, operate, and maintain your engine and control device according to the manufacturer's emission-related written instructions, or you change emission-related settings in a way that is not permitted by the manufacturer, you must demonstrate compliance as follows:

(1) Not applicable (for engines < 100 hp)
(2) Not applicable (for engines ≥ 100 hp and ≤ 500 hp)
(3) If you are an owner or operator of a stationary CI internal combustion engine greater than 500 HP, you must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must conduct an initial performance test to demonstrate compliance with the applicable emission standards within 1 year of startup, or within 1 year after an engine and control device is no longer installed, configured, operated, and maintained in accordance with the manufacturer's emission-related written instructions, or within 1 year after you change emission-related settings in a way that is not permitted by the manufacturer. You must conduct subsequent performance testing every 8,760 hours of engine operation or three (3) years, whichever comes first, thereafter to demonstrate compliance with the applicable emission standards.

The pertinent parts of 40 CFR 60 Subpart IIII require the diesel engine to be compliant with tier 4 interim standards, use fuel with a sulfur content of 0.0015% by weight (15 ppm), and require the operator to operate the diesel engine in accordance with the manufacturer's instructions. These conditions will be added to the permit.

NSPS Applicability of existing equipment

The nominal 100 MMBtu/hr boiler is subject to 40 Code of Federal Regulations (CFR) Part 60, Subpart Db - Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units. According to subpart Db, the regulation is applicable to each steam generating unit that commences construction, modification, or reconstruction after June 19, 1984, and that has a heat input capacity from fuels combusted in the steam generating unit of greater than or equal to 100 MMBtu/hour.

The diesel fire pump engine, an insignificant activity, is subject to the requirements of 40 CFR Part 63, Subpart ZZZZ. Subpart ZZZZ states that a new or reconstructed stationary RICE located at an area source must meet the requirements of Subpart ZZZZ by meeting the requirements of 40 CFR Part 60, Subpart IIII. No other requirements of Subpart ZZZZ apply to the engines. According to Subpart IIII, to be subject to the regulation the diesel engine would have to be constructed (ordered) after July 11, 2005, and manufactured after April 1, 2006.

Subpart IIII has emission certification requirements for the diesel engine manufacturers. In addition, the diesel engines are subject to restrictions on the maximum fuel sulfur content, and minimum cetane index or maximum aromatic content.

MACT Applicability of existing equipment:
The biomass boiler remains subject to the requirements of 40 CFR Part 63, Subpart JJJJJJ, National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources.

The fire pump engine remains subject to 40 CFR Part 63, subpart ZZZZ.

Part 51, Subpart A, Emission Inventory Reporting Requirements – Air Emissions Reporting Requirements (AERR)

40 CFR Part 51, Subpart A determines the applicability of emissions reporting based on the amount of emissions of each air pollutant from the facility. If the facility emits at or above any of the CER triggering levels shown in the following table, the facility is subject to AERR.

Minimum Point Source Reporting Thresholds by Pollutant (TPY)			
Pollutant	Annual Cycle type A sources	Three-year cycle type B sources	Green Energy Team, LLC
SO_x	≥ 2500	≥ 100	50.92
VOC	≥ 250	≥ 100	10.64
NO_x	≥ 2500	≥ 100	114.24
CO	≥ 2500	≥1000	87.41
Pb		≥ 5	2.02E-02
PM_{10}	≥ 250	≥ 100	11.22
$PM_{2.5}$[a]	≥ 250	≥ 100	11.22
Ammonia[b]	≥ 250	≥ 100	11.83

[a] All PM_{10} assumed to be $PM_{2.5}$.
[b] Ammonia emission rate based on 2.7 lbs/hr.

The facility is a Type B AERR source due to potential NO_x emissions.

Annual Emissions Reporting Requirements
As a covered source the facility is subject to the requirements of annual emissions reporting.

BACT Applicability:
A Best Available Control Technology (BACT) analysis is required for each air pollutant with a net increase in emissions equal to or greater than the significant levels as defined in HAR §11-60.1-1. With the exception of benzene, the addition of the two (2) DEG's will not cause a net increase in emissions greater than or equal to significant levels, so a BACT analysis is not required for the permit modification.

The following table compares emissions from the addition of the stationary CI RICE units to significant levels.

Comparison of Potential to Emit (PTE) to Significant Levels			
pollutant	PTE (tons/yr)[a]	significant level (tons/yr)	PTE exceeds significant levels?
Nitrogen Oxides	7.378	40	no
Sulfur Dioxide	0.014	40	no
Carbon Monoxide	0.948	100	no
Volatile Organic Compounds	0.089	40	no
Particulate Matter - TSP	0.089	25	no
Particulate Matter - PM_{10}	0.089	15	no
Lead	0	6.00e-01	no
Sulfuric Acid Mist	0	7	no
Beryllium	0	4.00e-04	no
Mercury	0	1.00e-01	no
Fluorides	0	3	no
Benzene	0.0084	any amount	yes

BENZENE BACT APPLICABILITY

Due to the fact that any increase in benzene emissions is considered to be significant, the benzene emissions from the operation of the DEG's are considered to be significant. However, since the amount of potential benzene emissions is approximately 8.4 pounds per year, it would not be economically feasible to add device to control such a miniscule amount. Therefore, benzene emissions will be minimized by using good combustion technology and design.

PROJECT EMISSIONS:

Criteria pollutant emissions and hazardous air pollutant emissions from the two DEG's are shown in the following tables, and were determined using the following assumptions:

- Annual fuel consumption limit of 132,000 gallons per year for each generator
- Maximum fuel consumption rate of 33 gallons per hour for each generator
- Emission factors for NO_2, CO, VOC and PM_{10} provided by manufacturer
- Emission factor for SO_2 determined by mass balance
- Sulfur content of fuel assumed to be 0.0015% by weight
- A fuel heating value of 136,548 BTU/gal.

Criteria Pollutant	Emission Factor (lb/MMBtu)	EMISSIONS (per unit)				
		(lb/hr)	(g/s)	Max (TPY)	Limited (TPY)	Total Combined (TPY)
SO_2	0.0015	0.0068	0.0009	0.03	6.80E-03	0.014
NO_2	0.8186	3.6889	0.4648	16.16	3.69	7.378
CO	0.1052	0.4741	0.0597	2.08	0.47	0.948
VOC	0.0099	0.0444	0.0056	0.19	0.04	0.089
PM_{10}	0.0099	0.0444	0.0056	0.19	0.04	0.089

HAP emissions:

HAP	Emission Factor (lb/MMBtu)	EMISSIONS (per unit)				
		(lb/hr)	(g/s)	Max (TPY)	Limited (TPY)	Total Combined (TPY)
Aldehydes	7.00E-02	3.15E-01	3.97E-02	1.38E+00	3.15E-01	0.6309
BENZENE	9.33E-04	4.20E-03	5.30E-04	1.84E-02	4.20E-03	0.0084
TOLUENE	4.09E-04	1.84E-03	2.32E-04	8.07E-03	1.84E-03	0.0037
XYLENES	2.85E-04	1.28E-03	1.62E-04	5.62E-03	1.28E-03	0.0026
PROPYLENE	2.58E-03	1.16E-02	1.46E-03	5.09E-02	1.16E-02	0.0233
1,3-BUTADIENE	3.91E-05	1.76E-04	2.22E-05	7.72E-04	1.76E-04	0.0004
FORMALDEHYDE	1.18E-03	5.32E-03	6.70E-04	2.33E-02	5.32E-03	0.0106
ACETALDEHYDE	7.67E-04	3.46E-03	4.35E-04	1.51E-02	3.46E-03	0.0069
ACROLEIN	9.25E-05	4.17E-04	5.25E-05	1.83E-03	4.17E-04	0.0008
Total PAH	1.68E-04	7.57E-04	9.54E-05	3.32E-03	7.57E-04	0.0015
			TOTAL	**1.51**	**0.34**	**0.69**

Adding the emissions from the existing equipment, the total emissions from the facility are:

Emissions Summary

pollutant	Existing emissions (tons/yr)	Total DEG emissions (tpy)	Total Emissions (tpy)
NOx	106.86	7.378	114.24
PM	11.13	0.089	11.22
CO	86.46	0.948	87.41
SO2	50.91	0.014	50.92
VOC	10.55	0.089	10.64
HAPs[a]	16.26	0.690	16.95

[a] No individual HAP greater than 10 tpy

Compliance Assurance Monitoring Applicability:

40 CFR Part 64 Compliance Assurance Monitoring (CAM) rule. To be subject to this rule a unit must meet all of the following criteria.

1. The unit must be located at a major source that is required to obtain a Part 70 or 71 permit;
2. The unit is subject to an emission limitation or standard for the applicable pollutant;
3. The unit uses a control device to achieve compliance;
4. Potential pre-control emissions of the pollutant are at least 100% of major source amount; and
5. The unit is not otherwise exempt, exemptions include:
   a. emission limitations or standards proposed by the Administrator after November 15, 1990, pursuant to Section 111 or 112 of the Act;
   b. stratospheric ozone protection requirements;
   c. acid rain program requirements;

d. emission limitations, standards, or other requirements that apply solely under an approved emission trading program;
e. emissions cap that meets requirements of 40 CFR §70.4(b)(12);
f. emission limitations or standards for which a part 70 or 71 permit specifies a continuous compliance determination method (defined as a method which is used to determine compliance with an emission limitation or standard on a continuous basis, consistent with the averaging period established for the emission limitation or standard). The exemption provided in this paragraph shall not apply if the applicable compliance method includes an assumed control device emission reduction factor that could be affected by the actual operation and maintenance of the control device;
g. backup utility power units that meet certain criteria.

The two diesel engine generators are not subject to CAM because they are not subject to emission limitation or standard for any applicable pollutant. The boiler remains subject to CAM for NO_x.

PSD Applicability:

To determine if PSD regulations apply to the modification for all criteria pollutants with the exception of CO_2, the increase in emissions from the DEG's are is added to the annual emissions from the facility and compared to the 250 ton per year annual emission trigger for PSD. None of the annual emissions for the pollutants in question exceeds the 250 ton PSD triggering level, so PSD does not apply.

PSD applicability for CO_2 is determined by calculating the equivalent CO_2 emissions (CO_2e) generated by the facility. If the CO_2e emissions exceed 100,000 tons per year, a PSD review is required.

The CO_2e emissions resulting from the addition of the two (2) diesel engine generators were determined to be:

Total CO_2e Emissions

Pollutant	CO2e (MTPY)	CO2e (TPY)
CO_2	1,347.26	1,485.09
CH4	1.15	1.27
N2O	3.39	3.73
Total	1,351.79	1,490.09

The total greenhouse gas emissions from the facility is:

Greenhouse Gas Emissions

unit	CO_{2E} (metric tonnes/yr)[a]	CO_{2E} (tons/yr)
Boiler	81,970	90,167
DEG (2)	1,351.8	1,490.1
Fire Pump Engine (exempt)	3	4
Total	83,325	91,661

[a] Includes CH_4 and N_2O

The CO_2e emissions for the existing equipment is unchanged. The addition of the diesel engine generators will add 1,490 tons per year of CO_2e annually, but does not cause the facility to

exceed the 100,000 ton CO_2e limit that triggers PSD review. Since the CO_2e levels do not exceed 100,000 tons per year, a PSD review is not required for the modification.

Synthetic Minor Status:
A synthetic minor source is a facility that is potentially major (as defined in HAR § 11-60.1-1), but is made non-major through federally enforceable permit conditions. This facility is not a synthetic minor based on potential emissions exceeding 100 tons per year of NO_x.

ALTERNATE OPERATING SCENARIOS:
No additional alternate operating scenarios have been proposed by the applicant.

INSIGNIFICANT ACTIVITIES:

1. Evaporative Cooler/Cooling Tower Emissions
   Maximum PM10/PM2.5 emissions = 0.9 tons/year at 8,760 hours/year operation

   Basis for insignificant determination: HAR §11-60.1-82(f)(7)(d)
   Other activities which emit less than two (2) tons per year of each regulated air pollutant other than carbon monoxide and which the director determines to be insignificant on a case-by-case basis.

2. 62 bhp (46 kW) Fire Pump Engine

   Manufacturer: Cummins (or equivalent)
   Model: CFP3-F25 (or equivalent)
   Fuel: diesel no. 2 or biodiesel with a maximum sulfur content of 0.0015%
   Fuel feed rate: 3.4 gallons/hr
   Maximum heat input: 3.4 gallons/hour x 0.14 MMBtu/gallon = 0.476 MMBtu/hr
   Emission certification: Tier 2

   Basis for insignificant determination: §11-60.1-82(f)(2)
   Other than smoke house generators and gasoline fired industrial equipment, fuel burning equipment with a heat input capacity less than one million BTU per hour, or a combination of fuel burning equipment operated simultaneously as a single unit having a total combined heat input capacity of less than one million BTU per hour.

3. Diesel and Biodiesel Fuel Storage Tanks

   Two (2) 13,000 gallon (approximate) capacity fuel storage tanks. Ultra-low sulfur diesel and biodiesel fuel for the emergency diesel generator, fire pump engine, and backup fuel for the biomass boiler will be stored in these tanks.

   Basis for insignificant determination: §11-60.1-82(f)(1)
   Any storage tank, reservoir, or other container of capacity equal to or less than forty thousand gallons storing volatile organic compounds, except those storage tanks, reservoirs, or other containers subject to any standard or other requirement pursuant to Sections 111 and 112 of the Act.

AMBIENT AIR QUALITY ASSESSMENT:
An ambient air quality assessment was performed to determine the maximum projected impact to air quality resulting from the installation and operation of the DEG's and for the operation of the biomass boiler.

The initial modification application requested an operational fuel limit for the DEG's of 66,000 gallons per rolling twelve-month (12-month) period, which equates to 1,000 hours of operation for each generator at the maximum fuel consumption rate. These conditions, were reflected in the ambient air quality analysis. However, due to boiler commissioning requirements, the applicant has requested that the DEG's operational fuel limit be doubled to 132,000 gallons per rolling twelve-month (12-month) period.

To properly assess the ambient air impacts resulting from the increase in allowable fuel consumption, the modeled annual ambient air impacts from the DEG's will be doubled to correspond to the doubling of the rolling twelve-month (12-month) fuel limit. Ambient air impacts for all time periods other than annual remain unchanged since the worst case emission rates were already used in the initial modification application.

Assumptions used in the modeling analysis are:

1. Rural dispersion parameters.
2. Meteorological data from Puhi station (Field 390), 1993-1994. The site is located about six (6) miles east-northeast of the project site.
3. Lihue airport upper air data.

Terrain and receptor locations:

Terrain is from USGS DEM and 7.5 minute quadrangle maps. The coarse grid consists of receptors spaced at 250 meters. A 25 meter grid was used around the facility fence line. The refined grid consists of receptors spaced at 25 meters.

Potential downwash effect:

EPA's BPIP program was used to derive 36 wind direction-specific building heights and projected widths for use in the model.

The background air quality data used in the ambient air quality model was obtained from the Kapolei monitoring station, and consists of the following:

Background Air Quality Data					
pollutant	averaging period	location	date	maximum background concentration ($\mu g/m^3$)	notes on background concentrations
NO_2	1-hour	Kapolei	2012	51	applicant's value is the 98th percentile value
	annual	Kapolei	2011	6	n/a
SO_2	1-hour	Kapolei	2012	18	applicant's value is the 99th percentile value
	3-hour	Kapolei	2011	31	n/a
	24-hour	Kapolei	2012	11	n/a
	annual	Kapolei	2011	0.002	n/a
PM_{10}	24-hour	Kapolei	2012	40	
	annual	Kapolei	2011	16.3	
$PM_{2.5}$	24-hour	Kapolei	2012	15	maximum is the 98th %ile 3-yr average
	annual	Kapolei	2012	7.1	maximum is the 3-yr average
CO	1-hour	Kapolei	2012	1714	n/a
	8-hour	Kapolei	2012	1222	n/a
Pb	quarterly	no data	no data	no data	n/a

Stack parameters and emission rates used in the ambient air quality analysis are presented in the following table.

Emission Rates and Stack Parameters								
unit	emission rates				stack parameters			
	PM_{10} (g/s)	SO_2 (g/s)	NO_x (g/s)	CO (g/s)	Height (m)	Temp (K)	Velocity (m/s)	Diameter (m)
Averaging Period: 1-hour								
Boiler	n/a	1.566	3.26[b]	2.610	30.48	393	17.27	1.25
DEG's (each)	n/a	8.73e-4	0.461	0.442	7.92	755.22	53.454	0.203
Averaging Period: 3-hours								
Boiler	n/a	1.566	n/a	n/a	30.48	393	17.27	1.25
DEG's (each)	n/a	8.73e-4	n/a	n/a	7.92	755.22	53.454	0.203
Averaging Period: 8-hours								
Boiler	n/a	n/a	n/a	2.610	30.48	393	17.27	1.25
DEG's (each)	n/a	n/a	n/a	0.442	7.92	755.22	53.454	0.203
Averaging Period: 24-hours								
Boiler	0.4035	1.565	n/a	n/a	30.48	393	17.27	1.25
DEG's (each)	0.0126	8.73e-4	n/a	n/a	7.92	755.22	53.454	0.203
Averaging Period: Annual (1,000 hr/DEG)								
Boiler	0.3197	1.464	3.071	n/a	30.48	393	17.27	1.25
DEG's (each)	0.0014	9.97e-5	5.261e-2	n/a	7.92	755.22	53.454	0.203

The result of the ambient air quality analysis is as follows:

Ambient Air Quality Impacts - Normal Operating Emissions					
pollutant and averaging period	model impact[a]	background concentration[b]	total impact[c]	AAQS	impact as % of standard
	µg/m³	µg/m³	µg/m³	µg/m³	
NO_x 1-hour	127	36	163	188	87
NO_x annual	9	6	15	70	21
SO_2 1-hour	117	18	135	197	69
SO_2 3-hr	58	31	89	1,300	7
SO_2 24-hr	28	11	39	365	11
SO_2 annual	4	0.002	4	80	5
PM_{10} 24-hr	9	40	49	150	33
PM_{10} annual	0.8	16.3	17	50	34
$PM_{2.5}$ 24-hour	9	15	24	35	69
$PM_{2.5}$ annual	0.8	16.3	17	50	34
CO 1-hr	811	1,714	2,525	10,000	25
CO 8-hr	333	1,222	1,555	5,000	31

To account for the revised fuel consumption limit, the modeled annual impacts from the DEG's are doubled. The annual impact for the DEG for each modeled pollutant is:

Pollutant	annual impact (µg/m³)[a]	annual impact (µg/m3)[b]
NO_x	3.2	6.4
SO_2	3.6	7.2
PM_{10}	0.8	1.6
$PM_{2.5}$	0.8	1.6

[a] assumes DEG's operated for 2000 hours per year
[b] assumes DEG's operated for 4000 hours per year

Increasing the hours of operation to 4000 hours per year results in the following impact After the adjustment to account for the increased operation of the DEG's the ambient air analysis is as follows:

Ambient Air Quality Impacts - Normal Operating Emissions					
pollutant and averaging period	model impact	background concentration	total impact	AAQS	impact as % of standard
	µg/m³	µg/m³	µg/m³	µg/m³	
NO_x 1-hour	127	36	163	188	87
NO_x annual	12	6	18	70	26
SO_2 1-hour	121	18	139	197	69
SO_2 3-hr	58	31	89	1,300	7
SO_2 24-hr	28	11	39	365	11
SO_2 annual	8	0.002	8	80	10
PM_{10} 24-hr	9	40	49	150	33
PM_{10} annual	1.6	16.3	18	50	36
$PM_{2.5}$ 24-hour	9	15	24	35	69
$PM_{2.5}$ annual	1.6	16.3	18	50	36
CO 1-hr	811	1,714	2,525	10,000	25
CO 8-hr	333	1,222	1,555	5,000	31

The applicant has demonstrated compliance with the state and national ambient air quality standards although the allowable operating hours of each DEG has doubled from 2,000 hours of operation annually to 4,000 hours of annual operation. Recommend issuance of modification pending 30-day public comment period and EPA 45-day review.

Kevin Kihara
December 2, 2013